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Daily News

Fearing EPA, Ohio Pushes Novel Numeric Nutrient Water Quality Index

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Ohio officials are proposing a novel numeric water quality index that will allow regulators to use a series of weighted factors to determine whether waterbodies are impaired by nutrients, the first such index that state officials have proposed since EPA began pushing states to adopt numeric criteria to assess water quality harms from nutrients.

Commented [SMJ1]: Visibly impainre…As opposed to numeric standards

State officials say they want to quickly complete their plan and submit it to EPA for approval both because they need to curb nutrient limits and because if they do not act, the agency could impose less-flexible federal limits -- much as officials did in Florida.

"Prolonged delays in Ohio's rule adoption efforts could lead to actions by U.S. EPA to promulgate standards for Ohio. These standards would almost certainly be less flexible and result in more extensive business impacts compared to the approaches under consideration by Ohio EPA," according to a recent fact sheet issued by the Ohio Division of Surface Water (DSW).

Some wastewater industry officials say the state's plan could serve as a model for other states that are grappling with how to regulate nutrients in their waters.

The Buckeye State's plan proposes a Trophic Index Criterion (TIC) for rivers and streams that measures four separate but weighted indicators of water quality, including waters' biological health, dissolved oxygen levels, benthic algae and nutrient concentrations.

"Though Ohio may be uniquely positioned to develop and use the TIC given the extensive water quality information it has available, the success of Ohio's weight of evidence approach will have national significance in terms of providing a potential model for other states that are struggling to address impacts related to nutrients," the National Association of Clean Water Agencies (NACWA) told state officials in a May 22 letter.

The TIC proposes to "weight" the criteria, allowing up to 12 points each for biological assemblages and dissolved oxygen, up to eight points for benthic algae and up to six points for nutrient levels.

The approach appears to provide regulators with a more certain numeric approach than EPA is urging states to adopt, but also requires demonstration of adverse biological impacts that many industry and state officials have sought before determining waters are impaired and require additional regulation.

"The TIC provides an integration of "stressor" variables (nitrogen and phosphorus concentrations) that potentially cause stream degradation with "response" data collected through measurements of biologically important stream attributes," the DSW fact sheet says.

Ohio's approach appears to stand in contrast to the "hierarchical" approach that Florida officials are urging EPA to accept, which would apply different nutrient standards to different classes of waterbodies. Florida's plan includes strict numeric limits for waters subject to cleanup plans or other

load limits, a weaker "stressor-response" test for lakes and springs, and, for other covered waters, a weight-of-evidence approach that would balance numeric thresholds for nutrients with assessments of overall water quality based on reference waters and measurements of ecological health.

"The final result allows a scenario in which the [nutrient] thresholds are exceeded, but because the floral and faunal measures are met, the streams are found to be healthy and well balanced," the agreement says.

While environmentalists are strongly opposed to Florida's approach, Ohio's concept is winning early support from both environmentalists and industry groups, and from both point and nonpoint dischargers, though in comments to state officials last month, they urged the state to adjust the index as currently crafted.

Wastewater industry officials also say they support Ohio's approach over Florida's. One industry source says that while Florida's proposal is an improvement over what EPA initially proposed for the Sunshine State, Ohio's proposal "takes that a step further."

Nutrient Strategy

Brian Hall, DSW's assistant chief, told a State Senate subcommittee May 15 that officials are working to finalize the TIC as part of a broader nutrient reduction strategy that also includes focusing on specific watersheds, setting load reduction goals, uniform tracking systems and ensuring the effectiveness of both point and nonpoint reductions.

"To address the problems [created by high nutrient levels], Ohioans are currently, and will need to make significant changes regarding the management of agricultural and urban landscapes to minimize the inputs of nutrients to our waterways," he said, adding that regulators must also consider the adequacy of nutrient removal technologies at wastewater treatment plants.

Under the Clean Water Act (CWA), states draft and EPA approves water quality criteria -- risk-based limits that regulators use, along with waterbodies' designated uses and antidegradation policy -- to set enforceable water quality standards and permit limits. But most states have opted for "narrative standards" for nutrients, which allow discharges of nitrogen and phosphorous to continue so long as there is no discernible effect on the waterbody, rather than setting a stricter and measurable numeric limit.

Environmentalists have long charged that states' use of narrative nutrient criteria makes it difficult to comply with the CWA's requirement that states determine whether a discharger has a "reasonable potential to cause, or contribute to an excursion beyond applicable water quality criteria."

They say such numeric criteria are needed to curb nutrient levels that are responsible for eutrophication, a process that removes dissolved oxygen from the water, causing large algal growths and "dead zones" in the Gulf of Mexico and elsewhere. In a bid to advance the issue, environmentalists successfully sued EPA to force the agency to set numeric criteria for Florida waters, and it began the process in 2009.

But agency efforts to craft numeric criteria for Florida's waters drew strong opposition from states and others. They charged that EPA shut out the state from the process, adopted an overly strict approach, failed to provide adequate flexibility and did not require demonstration of adverse biological effects when nutrients reached high levels.

The opposition EPA encountered in Florida prompted the agency to vow to work with states on their own criteria and to seek ways to provide significant flexibility. For example, in Montana EPA approved a variance that allowed state officials to implement its strict criteria in a phased approach over 20 years. In Kansas, the agency backed an initiative that would use a total maximum daily load cleanup plan to "work backwards" toward numeric nutrient limits over a period of a decade or more.

Commented [SMJ2]: 20 year plan for Montana on nutrients…BOD….not COD.

And EPA is currently weighing Florida's approach.

Environmentalists' Concerns

But environmentalists say Florida's approach is inadequate, arguing that the state's implementation plan lacks elements EPA previously said were essential to such rules, exempts some waters from having to develop numeric criteria and uses narrative, rather than numeric, "downstream protective values" that environmentalists say are necessary in order to make sure that downstream water quality will be protected by upstream limits.

By contrast, environmentalists are supporting Ohio's approach, though they are seeking adjustments. "We appreciate the effort of [DSW] to quantify the amount of nutrient impacts through the [TIC] and the high quality and transparent effort the Agency has made to use their data and directly demonstrate links between nutrients and water quality," the Nature Conservancy said in May 22 comments.

Some environmentalists, for example, said state officials should revise their weight-of-evidence measures to put more weight on high nutrient levels and should also craft a mechanism to consider downstream impacts.

The Ohio Environmental Council said in May 21 comments that it was concerned over how DWS had proposed to "weight" the four factors it considers in the TIC. The council said the net result of the weighting could be that "high nutrient concentrations, which can drive excessive swings in dissolved oxygen and promote excessive algal growth, may be considered as much less important than the other factors, even though those other factors may be driven by nutrient loads."

The group said that while the four factors are related, it called on officials to rebalance the weighting factors "to avoid the possibility of waters with a high nutrient load actually meeting the nutrient standard in a flowing stream but causing extreme harmful algal growth once they reach an area of calm receiving water."

The Nature Conservancy similarly called on Ohio to ensure that the TIC adequately accounts for downstream impacts, saying that many downstream waters -- including the Gulf of Mexico -- would not be adequately protected.

Commented [SMJ3]: Hmm…Gulf of Mexico? The dead zone most likely.

Agriculture industry officials also support the approach but called on officials to craft criteria that are specific to local "eco-regions." "The nutrient component of the index is based on a set of state wide values for total phosphorous and dissolved inorganic nitrogen. One would expect ecoregional differences in the nutrient background concentrations due to the unique ecosystem components," the Ohio Farm Bureau Federation said in its comments.

Wastewater industry groups also backed the approach, suggesting they expect EPA to approve it because it is consistent with approaches the agency has approved in Florida and Maine.

Commented [SMJ4]: This might include the maximum 10 year post closure wastewater treatment rule in Maine that pertains to the modifications to a rule in Maine intended on streamlining mining permits.

But the Association of Ohio Metropolitan Wastewater Agencies (AOMWA) raised concerns that regulators are proposing overly stringent nutrient and phosphorus targets. "We are concerned that these proposed targets would result in numeric limits for point sources that are at the very limit of existing technology capabilities" AOMWA writes. -- *Amanda Palleschi* (apalleschi@iwpnews.com)

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